What is claimed is:

1. A control system for managing a production schedule having time constraints that define a maximum elapsed time between operations, comprising:

a calculation unit configured to define a plurality of sub-time constraints between each two operations of the production schedule, generate a plurality of equations representing functions of the time constraints and the sub-time constraints, and calculate a value for the sub-time constraints with the equations; and

a determination unit configured to define a status for each operation according to a Work-In-Process (WIP) quantity between a first operation and a checked operation of the production line and a throughput rate of the checked operation, check whether the status violates any of the sub-time constraints between the first operation and the checked operation, and release a lot into the production line if the status for each

operation satisfies the corresponding sum of the sub-time constraints.

2. The control system as claimed in claim 1 wherein the calculation unit further simulates at least one queue time between two operations, and assigns the queue time to one of the sub-time constraints, thereby obtaining a remnant sub-time constraint.

3. The control system as claimed in claim 1 wherein the status is defined as follows:

$$S = WIP(o_1, o_n)/WPH(o_n),$$

wherein S is the status of a checked operation (O_n), $WIP(o_1, o_n)$ is the WIP quantity between the first operation (O_1) and the checked operation (O_n), and $WPH(o_n)$ is the throughput rate of the checked operation (O_n).

4. The control system as claimed in claim 1 wherein the status for each operation is further defined according to a process time for each operation between the first operation and

the checked operation except that process time attributed to the first operation (O_1) and the checked operation (O_n).

5. The control system as claimed in claim 4 wherein the status is defined as follows:

$$S = (WIP(o_1, o_n)/WPH(o_n)) - PT(o_2, o_{n-1}),$$

wherein S is the status of a subsequent checked operation ($o_2 \sim o_{n-1}$), $WIP(o_1, o_n)$ is the WIP quantity between the first operation (O_1) and the checked operation (O_n), $WPH(o_n)$ is the throughput rate of the checked operation (O_n), and $PT(o_2, o_{n-1})$ is the total process time of operations between the first operation (O_1) and the subsequent checked operation ($o_2 \sim o_{n-1}$) except that process time attributed to the first operation (O_1) and the checked operation (O_n).

6. The control system as claimed in claim 1 wherein the time constraints comprise overlapping time constraints.

7. The control system as claimed in claim 1 wherein the time constraints comprise a constraint selected from the group

consisting of dual-operation, multi-operation, and continuous time constraints.

8. The control system as claimed in claim 1 wherein a production line is directed to perform related operations if the lot is released to the production line.

9. The control system as claimed in claim 8 wherein the production line is a production line for manufacturing semiconductor products.

10. A method for managing a production schedule having time constraints that define a maximum elapsed time between operations, comprising the steps of:

defining a plurality of sub-time constraints between each two operations;

generating plurality of equations according to the time constraints and the sub-time constraints;

calculating the sub-time constraints using the equations;

defining a status for each operation according to a Work-In-Process (WIP) quantity between a first operation and a checked operation of the production

schedule and a throughput rate of the checked operation;

checking whether the status violates the sum of the calculated sub-time constraints between the first operation and the checked operation; and

releasing a lot if the status for each operation satisfies the corresponding sum of the sub-time constraints.

11. The method as claimed in claim 10 further comprising simulating at least one queue time between two operations, and assigning the queue time to one of the sub-time constraints, thereby obtaining a remnant sub-time constraint.

12. The method as claimed in claim 10 wherein the status is defined as follows:

$$S = WIP(o_1, o_n)/WPH(o_n),$$

wherein S is the status of a checked operation (O_n), $WIP(o_1, o_n)$ is the WIP quantity between the first operation (O_1) and the checked operation (O_n), and $WPH(o_n)$ is the throughput rate of the checked operation (O_n).

13. The method as claimed in claim 10 further comprising defining the status for each operation according to a process time for each operation between the first operation and the checked operation except that process time attributed to the first operation (O_1) and the checked operation (O_n).

14. The method as claimed in claim 13 wherein the status is defined as follows:

$$S = (WIP(o_1, o_n)/WPH(o_n)) - PT(o_2, o_{n-1}),$$

wherein S is the status of a subsequent checked operation ($o_2 \sim o_{n-1}$), $WIP(o_1, o_n)$ is the WIP quantity between the first operation (O_1) and the checked operation (O_n), $WPH(o_n)$ is the throughput rate of the checked operation (O_n), and $PT(o_2, o_{n-1})$ is the total process time of operations between the first operation (O_1) and the subsequent checked operation ($o_2 \sim o_{n-1}$) except that process time attributed to the first operation (O_1) and the checked operation (O_n).

15. The method as claimed in claim 10 wherein the time constraints comprise overlapping time constraints between the operations.

16. The method as claimed in claim 10 wherein the time constraints comprise a constraint selected from the group consisting of dual-operation, multi-operation, and continuous time constraints.

17. The method as claimed in claim 10 further comprising performing related operations if the lot is released to a production line.

18. The method as claimed in claim 17 wherein the production line is a production line for semiconductor products.

19. A dispatch method that accommodates overlapping time constraints that define a maximum elapsed time between select operations in a production schedule, comprising the steps of:

defining a plurality of sub-time constraints between each two operations;

generating plurality of equations according to the time constraints and the sub-time constraints;

simulating at least one queue time between two operations;

assigning the queue time to one of the sub-time constraints; and

calculating a remnant sub-time constraint using the equations.

20. The dispatch method as claimed in claim 19 wherein the production schedule is applied in manufacturing semiconductor devices.

21. A method for managing the manufacture of production lots of semiconductor devices, the method operable on a production schedule defining a plurality of time constraints between corresponding production operations, comprising the steps of:

defining a plurality of sub-time constraints between each two operations;

generating plurality of equations according to the time constraints and the sub-time constraints;

calculating the sub-time constraints using the equations;

defining a status for each operation according to a Work-In-Process (WIP) quantity between a first operation and a checked operation and a throughput rate of the checked operation;

checking whether the status violates the sum of the sub-time constraints between the first operation and the checked operation;

releasing a lot of a semiconductor product into a production line when the status for each operation satisfies the corresponding sum of the sub-time constraints; and

manufacturing the semiconductor product when the lot is released to the production line.

22. The method as claimed in claim 21 further comprising simulating at least one queue time between two operations, and assigning the queue time to one of the sub-time constraints, thereby obtaining a remnant sub-time constraint.

23. The method as claimed in claim 21 wherein the status is defined as follows:

$$S = WIP(o_1, o_n)/WPH(o_n),$$

wherein S is the status of a checked operation (O_n), $WIP(o_1, o_n)$ is the WIP quantity between the first operation (O_1) and the checked operation (O_n), and $WPH(o_n)$ is the throughput rate of the checked operation (O_n).

24. The method as claimed in claim 21 further comprising defining the status for each operation according to a process time for each operation between the first operation and the checked operation except that process time attributed to the first operation (O_1) and the checked operation (O_n).

25. The method as claimed in claim 24 wherein the status is defined as follows:

$$S = (WIP(o_1, o_n)/WPH(o_n)) - PT(o_2, o_{n-1}),$$

wherein S is the status of a subsequent checked operation ($o_2 \sim o_{n-1}$), $WIP(o_1, o_n)$ is the WIP quantity between the first operation (O_1) and the checked operation (O_n), $WPH(o_n)$ is the throughput rate of the checked operation (O_n), and $PT(o_2, o_{n-1})$ is the total process

time of operations between the first operation (O_1) and the subsequent checked operation ($o_2 \sim o_{n-1}$) except that process time attributed to the first operation (O_1) and the checked operation (O_n).

26. The method as claimed in claim 21 wherein the time constraints comprise overlapping time constraints between the operations.

27. The method as claimed in claim 21 wherein the time constraints comprise a constraint selected from the group consisting of dual-operation, multi-operation, and continuous time constraints.

28. The method as claimed in claim 21 wherein the step of manufacturing the semiconductor product comprises performing related operations thereon.

29. A semiconductor product produced according to the method for managing the manufacture of production lots of semiconductor devices of claim 21.

30. A semiconductor product produced according to the method for managing the manufacture of production lots of semiconductor devices of claim 22.

31. A semiconductor product produced according to the method for managing the manufacture of production lots of semiconductor devices of claim 23.

32. A semiconductor product produced according to the method for managing the manufacture of production lots of semiconductor devices of claim 24.

33. A semiconductor product produced according to the method for managing the manufacture of production lots of semiconductor devices of claim 25.

34. A semiconductor product produced according to the method for managing the manufacture of production lots of semiconductor devices of claim 26.

35. A semiconductor product produced according to the method for managing the manufacture of production lots of semiconductor devices of claim 27.

36. A semiconductor product produced according to the method for managing the manufacture of production lots of semiconductor devices of claim 28.

37. A computer-readable medium comprising executable instructions for controlling a production schedule defining a plurality of time constraints between corresponding production operations, comprising:

computer-readable program code for defining a plurality of sub-time constraints between each two operations;

computer-readable program code for generating a plurality of equations according to the time constraints and the sub-time constraints;

computer-readable program code for calculating the sub-time constraints using the equations;

computer-readable program code for defining a status for each operation according to a Work-In-Process (WIP) quantity between the first operation and the checked operation of the production schedule and a throughput rate of the checked operation;

computer-readable program code for checking whether the status violates the sum of the sub-time constraints between the first operation and the checked operation; and

computer-readable program code for releasing a lot into the production line if the status for each operation satisfies the corresponding sum of the sub-time constraints.

38. The computer-readable medium as claimed in claim 37 further comprising computer-readable program code for simulating at least one queue time between two operations, and assigning the queue time to one of the sub-time constraints, thereby obtaining a remnant sub-time constraint.

39. The computer-readable medium as claimed in claim 37 wherein the status is defined as follows:

$S = WIP(o_1, o_n)/WPH(o_n)$,

wherein S is the status of a checked operation (O_n), $WIP(o_1, o_n)$ is the WIP quantity between the first operation (O_1) and the checked operation (O_n), and

$WPH(o_n)$ is the throughput rate of the checked operation (O_n).

40. The computer-readable medium as claimed in claim 37 further comprising computer-readable program code for defining the status for each operation according to a process time for each operation between the first operation and the checked operation except that process time attributed to the first operation (O_1) and the checked operation (O_n).

41. The computer-readable medium as claimed in claim 40 wherein the status is defined as follows:

$$S = (WIP(o_1, o_n)/WPH(o_n)) - PT(o_2, o_{n-1}),$$

wherein S is the status of a subsequent checked operation ($o_2 \sim o_{n-1}$), $WIP(o_1, o_n)$ is the WIP quantity between the first operation (O_1) and the checked operation (O_n), $WPH(o_n)$ is the throughput rate of the checked operation (O_n), and $PT(o_2, o_{n-1})$ is the total process time of operations between the first operation (O_1) and the subsequent checked operation ($o_2 \sim o_{n-1}$)

except that process time attributed to the first operation (O_1) and the checked operation (O_n).

42. The computer-readable medium as claimed in claim 37 wherein the time constraints comprise overlapping time constraints between the operations.

43. The computer-readable medium as claimed in claim 37 wherein the time constraints comprise a constraint selected from the group consisting of dual-operation, multi-operation, and continuous time constraints.

44. The computer-readable medium as claimed in claim 37 wherein the production line is a production line for semiconductor products.

45. A computer-readable medium for dispatching product lots in a in a production process having a plurality of overlapping time constraints between corresponding production operations, comprising:

computer-readable program code for defining a plurality of sub-time constraints between each two operations;

computer-readable program code for generating plurality of equations according to the time constraints and the sub-time constraints;

computer-readable program code for simulating at least one queue time between two operations;

computer-readable program code for assigning the queue time to one of the sub-time constraints; and

computer-readable program code for calculating a remnant sub-time constraint using the equations.

46. The computer-readable medium as claimed in claim 45 wherein the production process is a production process for manufacturing semiconductor products.